DIRECT TRANSLATION OF ARTICLE 34 AMENDMENT SUBMITTED TO THE RECEIVING OFFICE IN JAPAN

AMENDMENTS
(Amendment under Art. 11)

To Patent Commissioner

1. International Patent Application No. PCT/JP2004/004574

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4. Documents Subject to Amendment: Specification and Claims

5. Content of Amendments: As in the enclosed document.

(1) lines 5-8, page 5, "claim..." should be changed to:

"comprising a receiving portion with directionality to receive a waterproof seal which is a disc-like rotating body with inclination in the predetermined angle; receiving recesses radially provided at the periphery of the receiving portion to be released in an outside of an axial right angle of the receiving portion and an upper surface, said receiving recesses receive the waterproof seals with top thereof directing a center of said receiving portion; a cover for restricting a movement of the receiving portion of the waterproof seal received by the receiving recess toward the outside of the axial right angle and surrounding the periphery of the receiving portion, a take-out means with a take-out exit opening at an inner circumferential surface of the cover to take out the waterproof seal received in the receiving recess in the axial right direction, a moving means for moving the receiving recess from a receiving region where the waterproof seal is received by the receiving recess to the take-out means by way of a rotational motion of the receiving portion, and an exclusion means for eliminate a chance of moving the

waterproof seal which is not received by the receiving recess and is among the waterproof seals from the receiving region to the take-out means".

lines 14-16, page 5, "according to the parts feeder..." should be changed to:
"can be seen in the example. Also, "exclusion means" is not limited to any particular structure but may be "providing an abutment means such as a plate or a brush at a position higher than waterproof seal received by the receiving recess so as to abut against the waterproof seal not received to remove that waterproof seal", "providing the receiving portion formed on the receiving recess with inclination in more than the predetermined angle so as to effectuate the gravity to remove the waterproof seal not received by the receiving recess", "rotating the receiving portion formed with the receiving recess to effectuate the centrifugal force to remove the waterproof seal not received by the receiving recess". Also, regarding a material for abutting against the waterproof seal, it is preferable that the material is relatively soft so as not to damage the waterproof seal as abutting. According to the parts feeder of this invention..."

line 11-20, page 6, "claims 2..." should be deleted.

line 1-5, page 7, "drum...according to claim 2 of this invention" should be changed to "Also, this invention".

lines 13-20, page 7, "claim 3...the receiving portion is rotated..." should be deleted.

lines 1-5, page 8, "by...according to the parts feeder of this invention..." should be changed to "furthermore according to the parts feeder of this invention..."

lines 10-13, page 8, "claim 4 comprises..." should be changed to:
"Also, according to the parts feeder of this invention, the receiving portion is the disc-like rotating body and the moving means operates as rotating the rotating body. Therefore, the receiving portion does not need to make a reciprocating motion, which simplifies the structure of the moving means. Also, comparing to the belt-like receiving portion, the number of parts and the cost decreases. Also, by forming the receiving recess around the periphery of the rotating body, the waterproof seal not received in the receiving recess moves toward the peripheral portion of the rotating body formed on the receiving recess by centrifugal force,

thereby facilitating the receipt of the waterproof seal in a space of the receiving recess. The parts feeder of this invention is comprised of the receiving detection means having the first sensor standing relative to the receiving recess to detect the positioning bore and the second sensor to detect the slit formed in the receiving recess and the controlling means determining that the waterproof seal is received by the receiving portion, based on the detection result from the receiving detection means, when the first sensor detects the positioning bore and the second sensor does not detect the slit in order to control the take-out means".

line 2, page 9, "claim 4 of this invention..." should be changed to "this invention".

lines 9-20, page 9, "claim 5...claim 1..." should be changed to:
"according to the parts feeder of this invention, the moving means has the stepping motor; and the controlling means, when taking out the waterproof seal by the taking out means, controls the moving means to stop the movement of the receiving portion. According to the parts feeder of this invention, when taking out the waterproof seal, the rotational movement of the receiving portion may be stopped and the take-out means is capable of taking out the waterproof seal almost straight in the axial direction.

lines 3-4, page 10, "parts feeder...claim 6..." should be changed to "according to the terminal press-connecting device, the above-explained parts feeder...the terminal press-connecting device..."

(2) page 26, claim 1, "directionality...parts feeder" should be changed to:

"comprising

a receiving portion with directionality to receive a waterproof seal which is a disc-like rotating body with inclination in the predetermined angle;

receiving recesses radially provided at the periphery of the receiving portion to be released in an outside of an axial right angle of the receiving portion and an upper surface, said receiving recesses receive the waterproof seals with top thereof directing a center of said receiving portion;

a cover for restricting a movement of the receiving portion of the waterproof seal received by the receiving recess toward the outside of the axial right angle and surrounding the periphery of the receiving portion,

a take-out means with a take-out exit opening at an inner circumferential

provide the parts feeder...is able to direct the waterproof seal in the predetermined direction to transfer to the next process.

DISCLOSURE OF THE INVENTION

The parts feeder of this invention is comprised of the disc-like rotating body with inclination of the predetermined angle, and further comprised of the receiving portion to receive the waterproof seal with directionality, the receiving recesses radially provided at the periphery of the receiving portion to be released in the outside of the axial right angle of the receiving portion and an upper surface the receiving portion and receiving the waterproof seal with its front end directing toward the center of the receiving portion, the cover to restrict the movement of the receiving portion of the waterproof seal received by the receiving recess toward the outside of the axial right angle and surround the periphery of the receiving portion, the take-out means with the take-out exit opening on the inner circumferential surface of the cover to take out the waterproof seal received in the receiving recess in the axial right direction, the moving means to move the receiving recess from the receiving region where the waterproof seal is received by the receiving recess to the take-out means by way of the rotational motion of the receiving portion, and a exclusion means to eliminate a chance of the waterproof seal not received by the receiving recess among the waterproof seals moving from the receiving region to the take-out means by the moving means moving to the take-out means.

The receiving recess is not limited to a particular structure but is satisfactory if the receiving recess can receive the waterproof seal only in the predetermined direction regardless of the shape or depth. The take-out means is not limited to a particular structure but can be such as a means to fetch by suction due to negative pressure, to fetch by abutting such as a bar against thereof to pushing the same, to fetch by grasping, to fetch by skewering, and to fetch by reversing the top and bottom of the receiving recess and dropping with its weight.

provide the parts feeder...is able to direct the waterproof seal in the predetermined direction to transfer to the next process.

DISCLOSURE OF THE INVENTION

The parts feeder of this invention is comprised of the disc-like rotating body with inclination of the predetermined angle, and further comprised of the receiving portion to receive the waterproof seal with directionality, the receiving recesses radially provided at the periphery of the receiving portion to be released in the outside of the axial right angle of the receiving portion and an upper surface the receiving portion and receiving the waterproof seal with its front end directing toward the center of the receiving portion, the cover to restrict the movement of the receiving portion of the waterproof seal received by the receiving recess toward the outside of the axial right angle and surround the periphery of the receiving portion, the take-out means with the take-out exit opening on the inner circumferential surface of the cover to take out the waterproof seal received in the receiving recess in the axial right direction, the moving means to move the receiving recess from the receiving region where the waterproof seal is received by the receiving recess to the take-out means by way of the rotational motion of the receiving portion, and a exclusion means to eliminate a chance of the waterproof seal not received by the receiving recess among the waterproof seals moving from the receiving region to the take-out means by the moving means moving to the take-out means.

The receiving recess is not limited to a particular structure but is satisfactory if the receiving recess can receive the waterproof seal only in the predetermined direction regardless of the shape or depth. The take-out means is not limited to a particular structure but can be such as a means to fetch by suction due to negative pressure, to fetch by abutting such as a bar against thereof to pushing the same, to fetch by grasping, to fetch by skewering, and to fetch by reversing the top and bottom of the receiving recess and dropping with its weight.

Also, "exclusion means" is not limited to any particular structure but may be "providing an abutment means such as a plate or a brush at a position higher than waterproof seal received by the receiving recess so as to abut against the waterproof seal not received to remove that waterproof seal", "providing the receiving portion formed on the receiving recess with inclination in more than the predetermined angle so as to effectuate the gravity to remove the waterproof seal not received by the receiving recess", "rotating the receiving portion formed with the receiving recess to effectuate the centrifugal force to remove the waterproof seal not received by the receiving recess". Also, regarding a material for abutting against the waterproof seal, it is preferable that the material is relatively soft so as not to damage the waterproof seal as abutting.

According to the parts feeder of claim 1 of this invention, the waterproof seal with the directionality is received at the receiving portion, is directed in the predetermined direction by receiving thereof in the receiving recesses formed at the receiving portion, and is taken out by the take-out means. That is, the waterproof seals will not received in the direction other than the predetermined direction in the receiving recess, thereby directing the waterproof seals in the predetermined direction simply by taking out the waterproof seals received in the receiving recess. As such,

the waterproof seal can be directed in the predetermined direction simply forming the receiving recess receiving the waterproof seals only in the predetermined direction in the receiving portion, which simplifies the structure of the parts feeder.

When changing the types of waterproof seals, the receiving portion simply needs to have the receiving portion with the receiving recesses appropriate for the shape of waterproof seal, which facilitates the operation and is applicable to many types of waterproof seals, thereby providing the parts feeder with an excellent flexibility.

Furthermore, even if plural types of waterproof seals are to be received in the receiving portion, by adjusting the receiving recess to the smallest waterproof seal, the smallest waterproof seal may be taken out from various waterproof seals. Accordingly, for example, the receiving recesses can be in combination with different parts feeder, which broadens the applicability to various types of the waterproof seals at the same time.

Also, according to the parts feeder of this invention, the moving means moves the receiving recess from the receiving region to the take-out means. That is, because the receiving region and the take-out means may be installed in separate positions, sufficient space for the waterproof seals to be in the receiving portion may be secured at the receiving region, and there is no need to stop the device when supplying the waterproof seals, thereby facilitating the supply of the waterproof seal.

Also, in the moving means secures the distance between the receiving region and the take-out means so as to position other devices therebetween, thereby for example increasing the degree of freedom with respect to arrangements in the entire terminal press-connection device and downsizing the device with the parts feeder.

Furthermore, according to the parts feeder of this invention, the exclusion means excludes the waterproof seal not received in the receiving recess, and when the take-out means removes the waterproof seal not received in the receiving recess as it lay over the waterproof seal received in the receiving recess, the take-out means is able to remove an obstacle and prevent from mistakenly removing the waterproof seal not received in the receiving recess.

Also, according to the parts feeder of this invention, the receiving portion is the disc-like rotating body and the moving means operates as rotating the rotating body. Therefore, the receiving portion does not need to make a reciprocating motion, which simplifies the structure of the moving means. Also, comparing to the belt-like receiving portion, the number of parts and the cost decreases. Also, by forming the receiving recess around the periphery of the rotating body, the waterproof seal not received in the receiving recess moves toward the peripheral portion of the rotating body formed on the receiving recess by centrifugal force, thereby facilitating the receipt of the waterproof seal in a space of the receiving recess. The parts feeder of this invention is comprised of the receiving detection means having the first sensor standing relative to the receiving recess to detect the positioning bore and the second sensor to detect the slit formed in the receiving recess and the controlling means determining that the waterproof seal is received by the receiving portion, based on the detection result from the receiving detection means, when the first sensor detects the positioning bore and the second sensor does not detect the slit in order to control the take-out means.

Here, the detection means is not limited to a particular structure and may be a structure which "has an emission portion and light-intercepting portion where the waterproof seal within the receiving recess shuts the light from the emission portion off reflect the light from the emission portion" or

"detects the waterproof within the receiving recess by providing a contact switch".

Also, the control means is not limited to the structure stated above and may be so-called a microcomputer comprising CPU, RAM, ROM, and other input and output devices.

In the parts feeder according to this invention, based on the detection result of the detection means, the control means controls the take-out means. More specifically, the control means confirms that the waterproof seal is received in the receiving recess and if the waterproof seal is in the receiving recess, the take-out means is activated to remove the waterproof seal. As such, while the waterproof seal is not being in the receiving recess, the take-out means never operates eliminating an unnecessary action of the take-out means. Also, the waterproof is removed after confirming that the waterproof seal is received, thereby providing more accurate take-out of the waterproof seal.

According to the parts feeder of this invention, the moving means has the stepping motor; and the controlling means, when taking out the waterproof seal by the taking out means, controls the moving means to stop the movement of the receiving portion.

According to the parts feeder of this invention, when taking out the waterproof seal, the rotational movement of the receiving portion may be stopped and the take-out means is capable of taking out the waterproof seal almost straight in the axial direction.

The terminal press-connection device according to this invention, parts feeder as explained above...

...comprised of the parts feeder, wherein the press-connection is performed by inserting the waterproof seal transferred from the parts feeder in and attaching the connecting terminal around an end portion of an electric transmission cable

According to the terminal press-connection device according to this invention, the terminal press-connection device comprises the parts feeder based on claim 1 so that the productivity of the terminal press-connection device is improved and the cost of manufacturing the terminal press-connection device is lowered.

As such, according to this invention, the receiving recess is formed so that the waterproof seal is received only in the predetermined direction in the receiving portion and the waterproof seal received in the receiving portion may be removed. Therefore, this invention does not depends upon the type of waterproof seal and provides a simple structure for directing the waterproof seal in the predetermined direction to be transferred to the next process.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the entire structure of the terminal press-connection device with the parts feeder in the first embodiment of this invention. FIG. 2(1) is a plan view of the structure of the parts feeder 9. FIG. 2(2) is a side view of the structure of the parts feeder 9. FIG. 3 is a perspective view of the structure of the parts feeder. FIG. 4 is a view from an arrow A of FIG. 2(2) explaining the structure of the parts feeder. FIG. 5 is a cross section view explaining the relation between the receiving recess and a positioning bore and the detection means. FIG. 6 is an enlarged perspective view of the principal part around the take-out exit of the take-out device. FIG. 7 is a perspective view of the structure of the conventional parts feeder.

PREFERRED EMBODIMENT OF THIS INVENTION

WHAT WE CLAIM IS:

1. (After Amendment): A parts feeder comprising

a receiving portion with directionality for receiving a waterproof seal which is a disc-like rotating body with inclination in a predetermined angle;

a receiving recesses radially provided at the periphery of said receiving portion to be released in an outside of an axial right angle of the receiving portion and an upper surface, said receiving recesses receive said waterproof seals with top thereof directing a center of said receiving portion;

a cover for restricting a movement of the receiving portion of the waterproof seal received by the receiving recess toward the outside of the axial right angle and surrounding the periphery of the receiving portion,

a take-out means with a take-out exit opening at an inner circumferential surface of the cover to take out said waterproof seal received in said receiving recess in the axial right direction,

a moving means for moving the receiving recess from a receiving region where the waterproof seal is received by the receiving recess to the take-out means by way of a rotational motion of the receiving portion, and

an exclusion means for eliminating a chance of moving the waterproof seal which is not received by the receiving recess and is among the waterproof seals from the receiving region to the take-out means.

2. (After Amendment): The parts feeder according to claim 1, further comprising:

a receiving detection means having a first sensor for detecting a positioning bore standing corresponding to the receiving recess and a second sensor for detecting a slit formed in the receiving recess and

a controlling means for controlling said take out means as determining that the waterproof seal is received by the receiving recess when a result of said receiving detection means shows that the first sensor detects the positioning bore and the second sensor does not detect the slit.

3. (After Amendment): The parts feeder according to claim 2, wherein

said moving means has a stepping motor; and

said controlling means, when taking out the waterproof seal by the taking out means, controls the moving means to stop the movement of the receiving portion.

4. (After Amendment): The terminal press-connection device comprising the parts feeder according to claim 4, wherein

said waterproof seal supplied from the parts feeder is inserted in an end of an electrical transmission cable; and a connecting terminal is attached to perform press-connection.